CLAIMS

What is claimed is:

1. A method for performing a jump function to a desired timepoint in a digital audiovisual file comprising:

a) when storing the audiovisual file to a storage medium:

adding recording headers in the audiovisual file on the storage medium, wherein the recording headers are distinct from a datastream of the audiovisual file; and

setting a timestamp in each recording header;

b) calculating an estimated storage position on the storage medium of the desired timepoint;

c) jumping to the estimated storage position;

d) finding a recording header near the estimated storage position;

e) reading a timestamp in the recording header;

f) determining if a timepoint indicated by the timestamp is within a predetermined time of the desired timepoint; and

g) if the indicated timepoint is not within the predetermined time:

re-calculating an estimated storage position; and

repeating steps (c) through (g).

2. The method as recited in claim 1, wherein step (b) comprises:

determining a total timelength of the audiovisual file;

determining a total storage unit length of the audiovisual file;

calculating an average storage unit per time unit rate by dividing the total storage unit length by the total timelength; and

calculating an estimated storage position by multiplying the average storage unit per time unit by the desired timepoint.

3. The method as recited in claim 2, wherein the storage medium is a hard disk and a storage unit used in the total storage unit length is a sector.

4. The method as recited in claim 2, wherein, when performing rewinding or fast forwarding through the audiovisual file, the average storage unit per time unit rate is used to calculate how much of the storage medium to skip over.

5. The method as recited in claim 1, wherein step (g) further comprises:

determining a number of iterations of steps (c) through (g) that have been previously performed; and

ending the method if the determined number of iterations exceeds a predetermined limit.

6. The method as recited in claim 1, wherein the re-calculating an estimated storage position sub-step of step (g) further comprises:

calculating a delta distance, wherein the delta distance may be a positive or negative number; and

calculating a new estimated storage position by adding the calculated delta distance to the current estimated storage position.

7. The method as recited in claim 6, wherein the delta distance is calculated using the following equation:

$$\begin{bmatrix}\text{Delta}\\ \text{Distance}\end{bmatrix}=\left[\frac{\text{Sectorlength}}{\text{Timelength}}\right]*\begin{bmatrix}\text{Desired}\\ \text{Timepoint}\end{bmatrix}-\begin{bmatrix}\text{Estimated}\\ \text{Timepoint}\end{bmatrix};\text{ and}$$

wherein Sectorlength is the total storage unit length of the audiovisual file, Timelength is the total timelength of the audiovisual file, and Estimated Timepoint is the indicated timepoint in step (f).

8. The method as recited in claim 1, wherein the audiovisual file is in Moving Pictures Expert Group (MPEG) format.

9. A method for performing a jump function to a desired timepoint in a Moving Picture Expert Group (MPEG) file comprising:

a) when storing the MPEG file to a storage medium:

(1) adding recording headers in the MPEG file on the storage medium, wherein the recording headers are distinct from a MPEG file datastream;

(2) setting a timestamp in each recording header; and

(3) storing an associated filenode on the storage medium, wherein the filenode comprises a total timelength of the MPEG file and a total storage unit length of the MPEG file;

b) calculating an estimated storage position on the storage medium of the desired timepoint by:

(1) retrieving a total timelength of the MPEG file from the associated filenode;

(2) retrieving a total storage unit length of the MPEG file from the associated filenode;

(3) calculating an average storage unit per time unit rate by dividing the total storage unit length by the total timelength;

(4) calculating an estimated storage position by multiplying the average storage unit per time unit by the desired timepoint;

c) jumping to the estimated storage position;

d) finding a recording header near to the estimated storage position;

e) reading a timestamp in the recording header;

f) determining if a timepoint indicated by the timestamp is within a predetermined time of the desired timepoint; and

g) if the indicated timepoint is not within the predetermined time:

(1) determining a number of iterations of steps (c) through (g) that have been previously performed;

(2) ending the method if the determined number of iterations exceeds a predetermined limit;

(3) calculating a delta distance, wherein the delta distance may be a positive or negative number;

(4) calculating a new estimated storage position by adding the calculated delta distance to the current estimated storage position; and

(5) repeating steps (c) through (g).

10. A digital audiovisual file storage system for performing a jump function to a desired timepoint in a digital audiovisual file comprising:

a storage medium for storing the audiovisual file;

a means for storing the audiovisual file on the storage medium;

a means for adding recording headers in the audiovisual file on the storage medium, wherein the recording headers are distinct from a datastream of the audiovisual file;

a means for setting a timestamp in each recording header;

a means for calculating an estimated storage position on the storage medium of the desired timepoint;

a means for jumping to the estimated storage position;

a means for finding a recording header near to the estimated storage position;

a means for reading a timestamp in the recording header;

a means for determining if a timepoint indicated by the timestamp is within a predetermined time of the desired timepoint; and

a means for re-calculating an estimated storage position.

11. The digital audiovisual file storage system as recited in claim 10, further comprising:

a processor being comprised of the means for calculating an estimated storage position on the storage medium of the desired timepoint, the means for finding a recording header near to the estimated storage position, the means for reading a timestamp in the recording header, the means for determining if a timepoint indicated by the timestamp is within a predetermined time of the desired timepoint; and the means for re-calculating an estimated storage position.

12. The digital audiovisual file storage system as recited in claim 11, further comprising:

an integrated receiver decoder (IRD) for receiving digital video broadcast signals, said IRD being comprised of the processor.

13. The digital audiovisual file storage system as recited in claim 10, wherein the storage medium is a non-volatile memory.

14. The digital audiovisual file storage system as recited in claim 10, wherein the storage medium is one of a hard disk, an optical disk, and a solid-state memory.

15. The digital audiovisual file storage system as recited in claim 10, wherein the audiovisual file is in Moving Pictures Expert Group (MPEG) format.

16. The digital audiovisual file storage system as recited in claim 10, wherein the means for calculating an estimated storage position on the storage medium of the desired timepoint comprises:

a means for determining a total timelength of the audiovisual file;

a means for determining a total storage unit length of the audiovisual file;

a means for calculating an average storage unit per time unit rate by dividing the total storage unit length by the total timelength; and

a means for calculating an estimated storage position by multiplying the average storage unit per time unit by the desired timepoint.

17. The digital audiovisual file storage system as recited in claim 16, wherein the storage medium is a hard disk and a storage unit used in the total storage unit length is a sector.

18. The digital audiovisual file storage system as recited in claim 16, further comprising:

a means for performing rewinding or fast forwarding through the audiovisual file by using the average storage unit per time unit rate to calculate how much of the storage medium to skip over.

19. The digital audiovisual file storage system as recited in claim 10, wherein the means for re-calculating an estimated storage position comprises:

a means for determining a number of iterations that have been previously performed; and

a means for ending the method if the determined number of iterations exceeds a predetermined limit.

20. The digital audiovisual file storage system as recited in claim 10, wherein the means for re-calculating an estimated storage position comprises:

a means for calculating a delta distance, wherein the delta distance may be a positive or negative number; and

a means for calculating a new estimated storage position by adding the calculated delta distance to the current estimated storage position.

21. The digital audiovisual file storage system as recited in claim 20, wherein the delta distance is calculated using the following equation:

$$\left[\begin{matrix}\text{Delta}\\ \text{Distance}\end{matrix}\right]=\left[\frac{\text{Sectorlength}}{\text{Timelength}}\right]*\left[\begin{matrix}\text{Desired}\\ \text{Timepoint}\end{matrix}-\begin{matrix}\text{Estimated}\\ \text{Timepoint}\end{matrix}\right];\text{ and}$$

wherein Sectorlength is the total storage unit length of the audiovisual file, Timelength is the total timelength of the audiovisual file, and Estimated Timepoint is the indicated timepoint in step (f).

22. A Moving Pictures Expert Group (MPEG) file storage and retrieval system for performing a jump function to a desired timepoint in an MPEG file comprising:

at least one MPEG file source for supplying the MPEG file;

an integrated receiver decoder (IRD) for receiving the MPEG file from the at least one MPEG source, said IRD comprising:

a first storage medium for storing the received MPEG file and an associated filenode, wherein the filenode comprises a total timelength of the MPEG file and a total storage unit length of the MPEG file;

a processor;

a second storage medium for storing programming code executable on said processor, the stored programming code including:

code for adding recording headers in the MPEG file on the storage medium, wherein the recording headers are distinct from a MPEG file datastream;

code for setting a timestamp in each recording header;

code for storing an associated filenode on the storage medium;

code for calculating an estimated storage position on the storage medium of the desired timepoint;

code for jumping to the estimated storage position;

code for finding a recording header near to the estimated storage position;

code for reading a timestamp in the recording header;

code for determining if a timepoint indicated by the timestamp is within a predetermined time of the desired timepoint; and

code for re-calculating a new estimated storage position.

23. The MPEG file storage and retrieval system as recited in claim 22, wherein the code for calculating an estimated storage position on the storage medium of the desired timepoint comprises:

code for retrieving a total timelength of the MPEG file from the associated filenode;

code for retrieving a total storage unit length of the MPEG file from the associated filenode;

code for calculating an average storage unit per time unit rate by dividing the total storage unit length by the total timelength; and

code for calculating an estimated storage position by multiplying the average storage unit per time unit by the desired timepoint.

24. The MPEG file storage and retrieval system as recited in claim 22, wherein the code for re-calculating a new estimated storage position comprises:

code for determining a number of iterations that have been previously performed;

code for returning a current estimated position if the determined number of iterations exceeds a predetermined limit;

code for calculating a delta distance, wherein the delta distance may be a positive or negative number; and

code for calculating a new estimated storage position by adding the calculated delta distance to the current estimated storage position.